ABSTRACT

An apparatus and method for quickly drying porous materials. A sealable chamber is connected to a cold trap which is connected to a vacuum pump. A sample is placed inside the sealable chamber. The vacuum pump is turned on and air is evacuated through the cold trap to the vacuum pump. Because evaporation may lower the temperature inside the sealable chamber, an infrared lamp may be used to heat the chamber and sample therein directly or heated air may be allowed to enter the sealable chamber in response to the vacuum created by the vacuum pump. Air may be drawn directly from the sealable chamber to the vacuum pump bypassing the cold trap. A load cell may be placed in the bottom of the sealable chamber to monitor the weight of a sample to determine if the drying process is complete. Other parameters could be used, including the degree of vacuum achieved in the chamber. The cold trap extracts moisture from the system, which eliminates the possibility of damage to the vacuum and creates an added pressure gradient for removal of air from the sealable chamber. Heating the chamber either by introducing heated air or by direct use of infrared heat facilitates drying of the sample and shortens the drying process.